

REMARKS

In the Office Action mailed March 16, 2009 the Office noted that claims 1-20 were pending and rejected claims 1-20. Claims 1-20 have been amended, no claims have been canceled, and, thus, in view of the foregoing claims 1-20 remain pending for reconsideration which is requested. No new matter has been added. The Office's rejections are traversed below.

ATTORNEY DOCKET NUMBER

The Applicants again respectfully request that the Attorney Docket No. be changed to **0600-1190** in the instant Application.

OBJECTION TO THE SPECIFICATION

The disclosure stands objected to for informalities. In particular, the Office states that the Specification lacks section headers. The Applicants submit herewith, replacement Specification containing section headings.

Withdrawal of the objection is respectfully requested.

REJECTIONS under 35 U.S.C. § 101

Claims 1-20 stands rejected under 35 U.S.C. § 101 as being directed to non-statutory subject matter. In particular, the Office asserts that claims 1-14 and 19-20 do not comply with the machine or transformation test for method claims set forth in

In re Bilski. Further, that claims 15-18 while drawn to an apparatus recite no hardware component.

The Applicants have amended the claims to overcome the rejection. Support for the amendment may be found, for example, in Fig. 3 as well as ¶ 0143 of the printed publication version of the Specification. The Applicants submit that no new matter is believed to have been added by the amendment of the claims.

Withdrawal of the rejections is respectfully requested.

REJECTIONS under 35 U.S.C. § 102

Claims 1-20 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Stylianou, *A system for voice conversion based on probabilistic classification and a harmonic plus noise model*, IEEE International Conference on Acoustics, Speech and Signal Processing. The Applicants respectfully disagree and traverse the rejection with an argument and amendment.

Stylianou discusses a mapping function to convert the voice of a first speaker to the voice of a second speaker.

On page 8 of the Office Action, it is asserted that Stylianou §§ II, III and IV disclose "a step (20) for the determination of a model representing the common characteristics of the spectral envelope and fundamental frequency of all said voice samples"; and "a step (30) for determining a prediction function for predicting the fundamental frequency according exclusively to said information relating to the spectral envelope

on the basis of said model and voice samples," as in claim 1

However, Nowhere in Siylianou is a model representing the fundamental frequency and spectral envelope characteristics of voice samples presented. There is no disclosure of the relationship between fundamental frequency of a voice sample and spectral envelop information. Instead, Slylianou discusses a Gaussian mixture model of spectral vectors x of a source speaker (eq. 1) and further presents a relationship (eq. 4) between the spectral vectors x of a source speaker and the spectral vectors y of a target speaker. This relationship is an estimation of the target spectral vectors y from an observation of source spectral vectors x which is used for conversion of a source speech signal into a target speech signal.

§ III of Slylianou does not describe any model defining the relationship between pitch (i.e. fundamental frequency) and spectral envelop characteristics. § III mentions a harmonic and noise model which performs a pitch-synchronous harmonic plus noise decomposition of the speech signal in which the speech spectrum is divided into a low and high band delimited by the maximum voiced frequency. This is to facilitate pitch-scale modification for voice conversion – i.e. rather than estimating a fundamental frequency from a spectral envelop information as in the present invention, the fundamental frequency from a source signal can be transformed to a fundamental frequency of a target speech signal.

No model is provided in Stylianou which would enable a fundamental frequency of a voice sample to be determined from spectral envelop information of the same voice sample.

The same argument applies likewise to claims 9 and 15.

Additionally, with respect to claims 9 and 15, Stylianou does not disclose predicting a fundamental frequency of the voice signal to be converted by applying a fundamental frequency prediction function to the transformed spectral envelope characteristics. Instead, the skilled person referring to Stylianou would calculate the fundamental frequency of the voice source signal and transform this fundamental frequency "pitch-scale modifications".

As expressed in the previous response, at the date of the invention it was considered that the spectral envelope was independent of the fundamental frequency. Consequently, the skilled person would not have considered determining a fundamental frequency as a function of the spectral envelope. The inventors went against the teaching of the prior art and discovered however that it was possible to determine a prediction function for predicting the fundamental frequency according to the spectral envelope. Stylianou does not suggest or teach towards the determination of such a function.

For at least the reasons discussed above, claims 1, 9 and 15 and the claims dependent therefrom are not anticipated by Stylianou.

Withdrawal of the rejections is respectfully requested.

SUMMARY

It is submitted that the claims satisfy the requirements of 35 U.S.C. § 102. It is also submitted that claims 1-20 continue to be allowable. It is further submitted that the claims are not taught, disclosed or suggested by the prior art. The claims are therefore in a condition suitable for allowance. An early Notice of Allowance is requested.

The Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 25-0120 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17.

Respectfully submitted,

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APPENDIX:

The Appendix includes the following item(s):

- ☒ - a Substitute Specification and a marked-up copy of the specification